Leveraging Utility Incentives for Rooftop Unit Efficiency: SoCalEdison Utility & RTU Incentive Testimonial
What is the Advanced RTU Campaign?

National Campaign to promote high-efficiency RTU solutions

- High-efficiency RTU replacements and new installations
- Advanced control retrofits
- Quality Installation and Quality Maintenance

www.advancedRTU.org
Join the Campaign!

- **Participants** are building owners, managers, and operators (69)
- **Supporters** provide technical services and products (183)
Campaign Supporters

183 Organizations that provide technical services and products, electric utilities, or regional efficiency organizations
Campaign Participants

69 Building owners and managers responsible for RTUs
Managing RTUs to Get the Highest ROI

1. Planned replacement with high-efficiency RTU
   - RTUs > 10-15 years old, 20% - 50% energy savings

2. Advanced RTU control retrofits
   - RTUs > 7 tons and > 5 years of service life, 20% - 50% energy savings

Lots of resources to guide you through the process!

Advanced RTU Campaign: Decision Tree for RTU Replacements or Retrofits

Preliminary Screening
What is the general condition, age, and size of each RTU?

Is the RTU a candidate for retrofit or replacement?

- General Condition
  - Fair-Good, Over 5 years, Under 7 tons
  - Fair-Good, Over 5 years, Over 7 tons
  - Fair-Good, Under 5 years
- Poor

Initial Inventory
- Building name
- Space type
- Age
- Size
- Manufacturer
- Model
- General condition
- Maintenance history

No Action  Retrofit  Replace  Replace
Business Case for Proactive RTU Replacement

Retail Lease Language for Efficient RTUs

(coming soon!)
Early Retirement Benefits

- Avoid costly emergency replacements
- Allows time for proper planning, design, and getting the best value
- Avoided maintenance calls
- Improved comfort (better T and RH control)
- Remove R22 from inventory
- Energy and peak demand savings
Early Retirement Example – Retail Store

Existing RTUs
- 5 12-ton 15 year old
- 8.7 EER degraded to 7.3
- Constant speed
- R22

Replacement RTUs
- 5 10-ton RTUs (right sized)
- 12 EER, 13.8 IEER
- R410A

Can the replacement be cost effective?
Early Retirement Example

From: Business Case for Proactive RTU Replacement

<table>
<thead>
<tr>
<th>Up-Front Costs</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capital</strong></td>
<td><strong>Energy Savings</strong></td>
</tr>
<tr>
<td>+ Design and Analysis</td>
<td>+ $7,688*5 years = $38,439</td>
</tr>
<tr>
<td>+ Cost of RTUs</td>
<td></td>
</tr>
<tr>
<td>$8,000/Unit</td>
<td></td>
</tr>
<tr>
<td>+ Installation &amp; Building</td>
<td></td>
</tr>
<tr>
<td>Upgrade Costs</td>
<td></td>
</tr>
<tr>
<td>$20,000</td>
<td></td>
</tr>
<tr>
<td>- Utility Incentives</td>
<td><strong>Additional Cost Savings</strong></td>
</tr>
<tr>
<td>-$1,640/unit</td>
<td>+ Right-Sized Equipment (included in price)</td>
</tr>
<tr>
<td>- Financing Options</td>
<td>+ Avoided Emergency Replacement</td>
</tr>
<tr>
<td>-$200/Unit</td>
<td>$26,250</td>
</tr>
<tr>
<td>Total Cost for 5 Units</td>
<td>+ Bulk Purchase (included in price)</td>
</tr>
<tr>
<td>= $50,800</td>
<td>+ Multiple-Measure RTU Packages (included in price)</td>
</tr>
<tr>
<td><strong>Variable Ongoing</strong></td>
<td>+ Avoided R-22 Costs (included in O&amp;M)</td>
</tr>
<tr>
<td>- O&amp;M</td>
<td><strong>Qualitative Benefits</strong></td>
</tr>
<tr>
<td>-$12,500</td>
<td>+ Air Quality and Comfort $2,000</td>
</tr>
<tr>
<td>($500 * 5 Units) = $2,500/yr * 5 yrs</td>
<td>+ Sustainability Values</td>
</tr>
<tr>
<td>+ Tax Depreciation</td>
<td></td>
</tr>
<tr>
<td>$1,750</td>
<td></td>
</tr>
<tr>
<td>($70 * 5 Units) = $350/yr * 5 yrs</td>
<td></td>
</tr>
</tbody>
</table>

**Financial Metrics**

- ROI Energy and Other Costs: 52%
- NPV: $5,030
- Payback Period: 3.3 Years
- IRR Energy and Other Costs: 16%
Thank You

www.AdvancedRTU.org

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Leveraging Utility Incentives for Rooftop Unit Efficiency

March 30th, 2016

Presented by:

Anne Marie Blankenship
Southern California Edison

Carey Oster
Energy Solutions

Jim Dunavant
Tri-Pacific Heating & Air-Conditioning, AMS
Why do utilities incentivize HVAC Early Retirement?

- Peak Demand Reduction
- Increased Renewables
- Decommissioned Power Plants
How does Early Retirement save energy?

Remaining Useful Life (RUL), minor repairs and maintenance

Existing Unit Energy Use

To-Code Unit Energy Use

Advanced RTU Energy Use

High efficiency unit energy reduction over the life of the equipment

Energy

Existing Unit

Energy Savings

Replacing Before RUL

Energy Savings

Installation of High Efficiency Unit

High efficiency unit energy reduction over the life of the equipment
How do utility incentives impact customers?

- Help overcome high first costs
- Shorten payback period
- Increase ROI, NPV, and IRR

Utility incentives get projects off the ground!
Accomplishments

80 Enrolled Contractors

Over $8.8 Million in Incentives

2,200 HVAC Units

450 Customer Sites

6 MW and 14 GWH Savings
SCE HVAC Early Retirement Program

Implemented by: ENERGY SOLUTIONS

- Incentives paid directly to HVAC contractor
- HVAC customer must receive electricity from SCE
- Existing units must be operational, verified with testing
- New unit must be high efficiency
Why work through HVAC Contractors?

- HVAC Experts
  - Understanding of program requirements
  - Easier for customers to participate
- Know where the old units are
- Teach *contractors or all customers* the application process
- Cross promotion of utility HVAC programs
  - Renovation and Maintenance
    - Advanced HVAC Measures
  - [https://www.hvacoptimization.com/](https://www.hvacoptimization.com/)
Contractor Testimonial

• Tri-Pacific Heating & Air-Conditioning
  – Program participant since April 2014
  – 60 applications submitted for nearly 50 sites
  – Over 600 tons of cooling replaced with new high efficiency units
The Customer Experience

• What have your customers said about the SCE HVAC Early Retirement Program?

• What benefits are customers most excited about when presented with the idea of HVAC Early Retirement?

• Are customers choosing to replace vs repair more often since the launch of the ER program?
The Contractor Experience

• Has the SCE HVAC Early Retirement Program helped your company close sales?

• Have you seen an increase in high efficiency unit sales?

• Are utility incentive programs helpful to you and your customers?
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